

CLAIMS:

1. A process for producing a transgenic plant, whose seeds have an increased amount of reserve material in comparison with a wild-type plant due to the reduction or elimination of the expression of an endogenous invertase inhibitor protein during the development of seeds so that the activity of invertase, which is subject to a regulation by the invertase inhibitor protein, is increased during the development of seeds leading to an increased accumulation of reserve material in the seed, said process comprising the steps of:

- (a) obtaining a nucleotide sequence expressed during seed development in flowers with young ovules;
- 10 (b) inserting the nucleotide sequence in a DNA construct in sense or anti-sense orientation next to a promoter as a regulatory unit;
- (c) transforming a plant cell of a plant, from which the coding nucleotide sequence was obtained, with the DNA construct; and
- 15 (d) cultivating the plant cell and regenerating a plant, wherein the expression of the endogenous invertase inhibitor protein is reduced or eliminated during seed development.

2. Process according to claim 1, wherein nucleotide sequence expressed during seed development is a nucleotide sequence coding for an invertase inhibitor protein.

3. Process according to claim 2, wherein the nucleotide sequence coding for an invertase inhibitor protein is a cDNA, obtained by the following steps:

- (a) separating and purifying an inhibitor protein fraction from the cell wall protein fraction of flowers with young ovules of a plant;
- 5 (b) digesting the inhibitor protein and separation of the resulting peptides;
- (c) sequencing the peptides in order to obtain the amino acid sequences;

- (d) deriving nucleotide sequences from the amino acid sequences and designing of primers; and
- (e) cloning a partial or full-length cDNA coding the invertase inhibitor protein from a cDNA library from flowers with young ovules of said plant or alternatively
5 synthesizing the partial or full-length cDNA using the primers.
4. A process according to claim 1, in which the promoter is a constitutive or inducible promoter.
5. process according to claim 4, in which the promoter is selected from the group consisting of CaMV35S promoter, ubiquitin promoter, and zein promoter from corn.
6. A process according to claim 2 in which the nucleotide sequence coding for the invertase inhibitor is a nucleotide sequence having a sequence identity of 80% or more to the cDNA sequence in the cDNA library from flowers with young ovules of a plant .
7. A process according to claim 2, in which the invertase inhibitor is an apoplastic invertase inhibitor.
8. A process according to claim 1, in which the DNA construct has additional regulatory units.
9. A process according to claim 8, in which an additional regulatory unit is a transcription termination signal.

10. A process according to claim 9, in which the transcription termination signal comes from a NOS gene of *Agrobacterium tumefaciens*.
11. A process according to claim 1, in which the plant cell is a cell of a dicotyledonous or monocotyledonous plant.
12. A process according to claim 11, in which the plant cell is from a plant selected from the group consisting of rape, sunflower, peanut, soy bean, oil palm, rice, corn, wheat, barley, oats, rye, pea, *Calendula officinalis*, *Coriandrum sativum*, *Crambe abyssinica*, *Cuphea* ssp., *Dimorphotheca pluvialis*, *Euphorbia lagascae*, *Euphorbia*
5 *lathyris*, *Lesquerella grandiflora*, *Limnanthes alba*, *Linum usitatissimum*, *Lunaria annua*, *Lunaria biennis*, *Oenothera* ssp., *Ricinus communis* and *Simmondsia chinensis*.
13. A process according to claim 1, in which the DNA construct is in a vector.
14. A process according to claim 13, in which the vector is a plasmid or a virus.
15. A process according to claim 1, in which the transformation of the plant cell is carried out by an *Agrobacterium tumefaciens*-mediated transformation or a biolytic process comprising a step selected from the group consisting of electrically induced DNA absorption, chemically induced DNA absorption, electroporation, macroinjection,
5 microinjection and PEG-mediated transformation.